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The research task was to describe and construct theoretical background for Craft Sense in early education. Craft Sense represents a learner's skill for obtaining Sloyd (Craft, Design & Technology) related knowledge, skills and understanding. The development of Craft Sense is based on producing artefacts and evaluating the production process. In this research, the concept of Craft Sense is based on the integration of Sloyd and meta-cognitive regulation of learning activities. Based on theoretical information, an empirical research question was formulated: "What kind of Craft Sense do children have in early education Sloyd?" The method of study was assessing picture supported learning on a Sloyd course for young children. The data was analyzed by qualitative content analysis and Child Behaviour Rating Scale (CBRS). Findings indicate that the development of children's Craft Sense can be supported with pictures. Furthermore, the CBRS can be used to evaluate and understand children's Craft Sense.

Keywords: Craft Sense, Sloyd, Sloyd Education, Meta-cognition

Introduction

The goal of the study is to develop and support children's awareness of sloyd process. The context of the study is Finnish sloyd in early education. Based on Nordic heritage Craft, Design and Technology are often referred to as Sloyd in Finnish education ("slöjd" is Swedish for handicraft). The university subject is Sloyd (Craft & Technology) Education. (Peltonen, 2003a; Metsärinne & Kallio, 2011.) Finland was the first country to accept sloyd into the national curriculum in 1866 by the act of Uno Cygnaeus. Nordic Sloyd Education was the influence for many other countries establishing similar subjects. In Finland, school sloyd is divided into technical and textile work. Sloyd is compulsory in Finland up to grade seven and then optional up to grade nine. Up to grade four, pupils usually study both technical and textile work and from grade five they usually can choose which areas of interest they want to study. Technical work can further be divided on a material basis (wood, metal, plastic, machinery and electronics) but none of these are mentioned specifically in the National Core Curriculum. The concept is fairly unique internationally, even though it includes applicable elements of craft, technology and design as well (comp. Sjöberg, 2009). Sloyd emphasizes education of cognitive guidance of entire production, while "craft" is referred to as more practical. In itself, "design" is a complicated concept for general education because it is related to more industrial and commercial production. Furthermore, "design" is closer to art education which is another subject area – technology education is closer to natural sciences, though technological knowledge is applied in sloyd as well. Sloyd is focusing in more individual intrinsic objectives whereas design is focusing in objectives of certain extrinsic usage targets. Technology education is focusing more in teaching technological literacy by illustrating scientific and technological systems.

The general goal of sloyd is to educate pupils to maintain or reform the environment of life more viable (Peltonen, 2003a; 2003b). The core feature is how to create unique production activities. (Peltonen, 2003a; 2003b; Metsärinne, Kullas, Kallio & Pirttimaa, 2010). Any techniques and technologies may be applied purposefully in Sloyd Educational activities, i.e. when producing products or when maintaining or repairing them (Peltonen, 2009; Metsärinne, 2009). The primary task of S.E. production activities is to improve pupils' thinking, i.e. envisioning and managing entire production activities. Activity by hand, work and skillfulness is the secondary task. (Peltonen, 1988, Metsärinne & Kallio, 2011; Nygren-Landgärds, 2001; Lindfors, 1999).

Cognitive guidance of entire sloyd educational production activities is called craft sense. Production activities comprises complicated knowledge basis with as well cognitive and emotional range. The starting point of sloyd educational production activities is unique perception of individual life-world environment and envision of maintaining or reforming it. In this article we compare craft sense with metacognitive self-regulation of learning activities within sloyd educational producing activities.

Theoretical background

The general goal of Sloyd is to help pupils gain skills that they need to maintain or reform the environment of life (Peltonen, 2007). Furthermore, like early education, Sloyd has a general educative task to educate the entire personality of the pupil. This means that Sloyd should encourage behavioural models that are desirable for the individual and society alike. The core features focus on how to create unique production within school Sloyd activities (Peltonen, 2003; Metsärinne, Kullas, Kallio & Pirttimaa, 2010). Today Sloyd related tasks rarely include producing or copying artefacts for home use compared to a few decades ago (Metsärinne, 2003, Virta, 2006). The primary task of production activities is to improve pupils' envisioning; and the secondary task is to increase activity and skilfulness by hand (Peltonen, 1988, Metsärinne & Kallio, 2011). With concrete production activities and individual experiences, school Sloyd is a natural way to combine theory and practice, which is also an essential skill for deeper understanding of other topics. (Peltonen, 1993b, 1995, Suojanen, 1994, Metsärinne, 2003, Virta, 2006).

Production activities include four key areas in early education Sloyd: 1. Goal Setting, 2. Ideation and Planning, 3. Implementation and 4. Evaluation. The key areas form a theoretical model for production processes, although the processes are rarely straightforward and often varying and complex.

1. Goal Setting

The first key area is goal setting for the entire production process and outcomes. In Sloyd, not only concrete goals such as production processes and product quality are involved, but also educative goals like the development of personality must be set (Metsärinne & Kallio, 2011) to avoid purposeless activities (Heikkilä, 1987). Pupils are in a central role in goal setting as production activities should take place within their frame of experience. For didactic and institutional purposes though, it is not meaningful to let pupils fully set their own goals. Goal setting includes orientation and motivation and thus has an important role especially in early education.

To set goals, previous experiences are recollected with creative ideation. Ideas emerge in accordance with present needs or inspired by various stimuli and the synthesis of knowledge, skills and previous experiences. These three elements form the current academic insight of learning Sloyd. (Tempelman & Pilot, 2011, p. 262). In the beginning, ideas may appear as vague images, dreams, fantasies or sketches. From this point of view, efforts to describe ideas directly might represent internal cognition poorly and would therefore be a less effective method to achieve set goals. (Trebell, 2011, p. 20–21). The envisioning includes recalling experiences and sharing them with other participators. In reflection, a child must express the experience as it was, not in a way it should have been. Although reflection is an experience in itself, it is not the aim in Sloyd. The goal is ideation and the envisioning of creative production activities.

2. Ideation and Planning

In the second key area, processes, products and outcomes are planned according to the goals. The ideas and visions are developed and implemented through aesthetic and technical planning. Operative planning involves a great deal of gathering information, experimenting, problem solving, assessment and making decisions. Whereas on the other hand, process based learning requires a wide range of

knowledge, skills and understanding and also team work skills. (Herold & Ginestie, 2011, p. 57). The child refines an idea and develops a plan to transfer the idea to practice. During the production process, the child stops to assess progress several times and develops the idea from a new perspective. Such visionary requires creativity and both aesthetic and technical skills as well as specified content knowledge. Affective features need to be taken into consideration as well; taking notice of positive feelings can evoke positive attitudes towards learning and coping with negative feelings enables a more meaningful evaluation. Reflection in this area is a tool for finding new viewing points, developing behavioural models and applying new knowledge to Sloyd.

3. Implementation

The third key area is implementation of the ideas and plans to achieve set goals. Previously acquired skills can be used as well as those newly practiced during the planning phase. Alterations to plans may vary according to materials and techniques used. The implementation phase involves assessing completed production phases and the unfinished product (Virta, 2006).

4. Evaluation

Evaluation and re-evaluation of experiences is an essential part of Sloyd learning. The main areas of evaluation of school and early education sloyd are: 1. the evaluation of the sloyd product, 2. the evaluation of the sloyd process and the each parts of the process. The purpose of evaluation is to attach new knowledge to the learner's cognitive schemata. In addition, constructing new cognitive schemata can be the outcome of a reflective process, as well as creating positive attitudes towards Sloyd learning.

5. Meta-level of sloyd and regulation of learning

Successful self-regulation of behaviour indicates not only task orientation but also that the task is suitable for the learner's envisioning of production. (Syrjäläinen, 2003; Lepistö, 2004; Peltonen, 1988; Lindfors, 1999; Virta, 2006). There are many definitions of the concept of self-regulated learning (Bandura, 1977;, Boekaerts, 1995; Bråten, 1991a; Paris & Winograd, 2001; Zimmerman, 1989; Virta, 2005). Zimmerman (1989) asserts that all models of self-regulated learning assume that learners are aware of the potential usefulness of these self-regulatory processes in enhancing their cognitive performance (see also Bråten, 1991b). Bandura (1977) defines self-regulation as the ability to control our own behaviour. Bandura suggests three steps: 1. self-observation, 2. judgment and 3. self-response. According to Zimmerman (1989), self-regulation strategies include self-evaluation, organizing and transforming, goal setting and planning, seeking information, keeping records and monitoring, environmental structuring, self-consequating, rehearsing and memorizing, seeking social assistance and reviewing records.

Meta-level of Sloyd (Craft Sense)	**Meta-cognitive regulation of learning**
Goal setting	Orientation/goal setting
Planning (of artefact and production process)	Planning
Implementation	Monitoring, testing and diagnosing
Evaluation	Evaluation

Figure 1. An analogical model of meta-cognitive regulation of learning and the meta-level of Sloyd.

According to Matthews, Morrison & Ponitz (2009), early childhood self-regulation includes behavioural aspects. These depend on cognitive skills including working memory, attention control and switching and inhibitory control. (Matthews, Morrison & Ponitz, 2009; Barkley, 1997; Bronson, 2000; McClelland, Cameron, Wanless & Murray, 2007). Behavioural regulation requires pupils to

integrate these multiple component skills and form behavioural responses, such as remembering a classroom rule to raise their hand before participating. Behavioural regulation is distinct from emotion regulation, or the regulation of emotional responses to stimuli; emotion regulation is also important for social and educational outcomes but is not a focus here (Matthews, Morrison & Ponitz, 2009; see also Eisenberg, Spinrad & Smith, 2004). Behavioural regulation includes children's ability to remember directions, as well as monitor, inhibit and direct their attention and behaviour (Matthews, Morrison & Ponitz, 2009; see also Gathercole & Pickering, 2000; Rueda, Posner & Rothbart, 2005).

Successful regulation of behaviour is accomplished with executive functions making it a primarily cognitive construct (Matthews, Morrison & Ponitz, 2009; see also Shonkoff & Phillips, 2000; Zelazo, Muller, Frye & Marcovitch, 2003). Another term includes cognitive regulation, defined as "the regulation of attention and selective strategy use in the execution of cognitive tasks" (Matthews, Morrison & Ponitz, 2009; see also Blair, 2002, p. 112). In this research, we focus on task related behaviour and therefore on the classification of classroom regulation on the CBRS (Bronson, Tivnan & Seppanen, 1995). In figure 1 we present an analogical model of meta-cognitive regulation of learning and the meta-level of Sloyd. This research aims to understand self-regulation within Sloyd and to identify and point out meta-level regulation of Sloyd i.e. Craft Sense. In the results self-regulation and CBRS observations will be combined to describe Craft Sense.

To summarize, the teacher and child both fulfil similar functions during the production process (Metsärinne, Kallio & Virta, 2012). They envision and carry out the process and interact to find solutions (Peltonen, 1988). The goal is to produce and learn by producing. In Sloyd, the pupil strives towards established goals and additional goals and objectives that may rise from context. The teaching and learning strategy is to be regarded as an alternating interpretation process through which the pupil is being taught to foresee and model production methods, handle transformation and realizing processes within production and approve the finished product.

In early education, Sloyd teachers should inspire motivation. Children begin to take interest at a young age if they can interact by touching and grasping the objects of study. They also learn to grasp objects intentionally. Babies' brains change when they are approximately 7 months old and have learned to crawl. They begin to be more aware of their own actions and accomplishments. According to Cole, Cole & Lightfoot (2005), these changes in the brain are vital for perceptual-motor development. Motivation can be supported by supporting the envisioning of the production process. According to Vygotski (1978), the help of a more experienced person can help a child accomplish things or tasks they would not be able to accomplish on their own.

Research methods

The participants of the Sloyd course were 6 preschool aged children and 9 children aged 4–5. The course was planned carefully and motivational and orientation aspects were given special attention. This was assured by visiting a Viking Age cemetery where the children were divided into three groups and kindergarten teachers guided the groups through the excavation area (figure 2). This gave the children an idea of what kind of things graves tell us about life in the Viking Age. Next, the groups visited the pre-historic remains of a fortress hill and finally a pre-historic information centre where an archaeologist introduced the children to life in the Viking Age. After that, the group of children was lead into the Sloyd project by the kindergarten teachers using photographical materials that guided the discussion and comparison between nowadays and the Viking Age. The next phase consisted of the actual Sloyd project, which the researcher also participated in. The process was considered to include four phases: 1. Orientation/Motivation, 2. Ideation and Planning, 3. Production and 4. Evaluation.

Figure 2. Visit to the Viking Age excavation site in Luistari Eura.

In the introduction, the researchers asked what the children knew about Sloyd processes and then explained the project and methods to the children so they knew what would happen. The course project was explained to the group with the support of picture material designed specifically for the course. The task was to design and make a Viking type wooden shield. After the course, the preschool group continued with other Viking themes.

The data collected during autumn 2008 included video observations and interviews. During the first stage, the children were asked what they knew about Sloyd processes, especially what different phases were included. After this, the theme and pictures were introduced. Every time a new technique, tool or phase was introduced, the teacher referred back to the pictures. Also, in the beginning of every teaching session, children were asked what they had done last time and what they thought would come next. If a child asked what would come next or what he/she should do, the teacher told the child to take a look at the pictures and ask again if they were still not sure.

After the production process, the first stage of evaluation was to compare the plan (a round cardboard model of the shield) to the actual wooden shield and report any alterations to the plan and why they had been made. This was a way to teach the children assessment. Next, they described the best aspects of their product and were asked if they wanted to make any alterations afterwards. Then the researcher asked each child to put the model pictures in chronological order as remembered. The children also reported what they had done in each phase. The researcher also asked how the children would proceed if they were to start a new project. These interviews took place individually. After the task had been completed, the children showed the shields to the rest of the group and shared any remarks concerning the shield or the making process.

The main research question was: "What kind of Craft Sense do children have in early education Sloyd?" The sub-questions were: 1. "What kind of knowledge did the group have about Sloyd?", 2. "Do pictures help children understand the essence of Sloyd and phases of production?", 3. "Is there any kind of transfer within understanding Sloyd?" and 4. "How does general self-regulation indicate Craft Sense?"

The research method was qualitative content analysis for answering the first three questions. In content analysis, information is sought from documents by a scientific method (Anttila, 1996; see also Pietilä, 1976). The method can include organizing, classifying, categorizing and describing the object of research (Kyngäs & Vanhanen, 1999). Tuomi & Sarajärvi (2002) defined content analysis as describing contents of documents or data so that the object of research is made visible. Syrjäläinen (1994) saw seven phases in qualitative content analysis (see also Metsämuuronen, 2001). In the first phase, the researcher familiarizes with the data and main concepts. After that, the researcher digests and theorizes the data. In the third phase, a rough classification and categories are made. The fourth phase includes the clarification of the research task and concepts. The fifth phase includes the statistical presentation of the phenomena i.e. frequencies, deviations and new classification. After that comes cross validation; supporting and rejecting the categories with the data. The last phase consists of conclusions and interpretation. This means that the results of the analysis are examined in a wider context. The analysis method of this research is modified from Anttila (1996), Pietilä (1976) and Syrjäläinen (1994). The basic framework is adopted from Syrjäläinen (1994) and the framework is used as thoroughly as possible. The analysis also resembles quantitative methods because theory directed the content analysis like Anttila (1996) and Pietilä (1976) describe. (See also Virta, 2006; Kallio & Virta, 2010).

Self-regulation within the course sessions was analyzed by selected items of Child Behaviour Rating Scale (CBRS) (Bronson, Tivnan & Seppanen 1995). In this research we concentrated on self-regulation in the classroom by following items: 1. Response to Instructions and Initiation, 2. Concentration While Working, Vulnerability to Distraction, 3. Returning to Unfinished Tasks after Interruption, 4. Recognition of Errors and Corrections, 5. Rule Observing and Following Directions without Reminders and 6. Successful Completion.

Three researchers analyzed recorded teaching sessions concerning one child (Elmeri). One child was chosen for deep and thorough in-sight. Self-regulation is very important in Sloyd but is not as yet a thoroughly researched topic. The researchers used selected items of CBRS to determine how self-regulation occurs in Sloyd. The process model of Sloyd was used as framework for categorizing. The Orientation/Motivation phase was excluded from the analysis as it did not include actual Sloyd activities. Phase two – Ideation and Planning – lasted 45 minutes. The phase included sketching and drawing in the guidance of stimulating pictures. The production phase was divided into two sessions of 45 minutes each. In the first session, the children filed and sanded and in the next, decorated, added finishing and attached the leather grip behind the shield. Evaluation included group evaluation where every child presented their product. Then the evaluation continued with individual interviews. The interviews were structured according to the Sloyd project and the model pictures were used to test the children. At first, the pictures were placed in a random order and the children were asked to re-arrange them in order to demonstrate the actual process and to describe what happened in every picture.

In the analysis of self-regulation, the researchers first observed how children responded to instructions and initiated appropriate tasks (item 1). This took place in the beginning of every session. During the phases of independent work, the researchers observed how the children concentrated and whether they were easily distracted (item 2), how they returned to unfinished tasks after interruption (item 3), how they recognized errors and corrected them (item 4) and how they observed rules and followed directions without reminders (item 5). At the end of the task and each teaching session, the researchers observed how the children completed tasks or production phases (item 6). These observations were made from video recordings of the sessions by three researchers. Every researcher wrote separate notes.

Results

Analysis of the recorded interviews revealed that the children had a vague knowledge about Sloyd processes. Sloyd activities with challenging materials are quite rare in early education and teachers may not have enough knowledge to guide such projects. The pre-school children had some kind of understanding about Sloyd including the making of artefacts, but none could tell specifics such as how the process starts. Sanna, aged 6, stated that "Sloyd is some kind of making with tools." This suggests that Sloyd projects are unfamiliar to younger children.

The interviews that followed the project started with a self-evaluation phase. In the evaluation, children compared the finished product with the cardboard plan. Most of the plans and finished products could be seen as matching pairs. Children aged 4 or more could tell very specifically about their plan and the product. They were also able to report major alterations. Answers that assessed best product qualities ranged widely.

The next stage was to find out how the pictures had helped children understand the Sloyd process. Younger children (aged 4) started their description from techniques. They mostly remembered the right order of the tools and techniques. However, they did not recall ideation and planning as a separate phase despite the pictures in front them. For example, when a researcher asked: "What did you do first?" a girl named Vilma (aged 4) pointed at the picture showing filing and said: "We filed." After the pictures had been arranged, the children usually realized that there were two pictures left over. After looking at the pictures again, they remembered that they had started with the ideation and planning.

Children aged 5 and especially pre-school aged children had no problems arranging the pictures in the right order. It was clear to them that the process had started with ideation and planning although the pictures showing ideation and planning were often mixed up. Juhani (aged 5) said: "(The bear) is planned and ideated in that picture..." Pre-school aged children were more confident about the phases as can be interpreted from a quotation from Liisa (aged 6) pointing at the ideation picture: "We thought about what we would do." These results can be explained by the fact that during the project, children aged 4 were busy with new techniques and tools. Their dexterity and hand-to-eye coordination were not developed enough to concentrate more on the process and pictures. They did not concentrate on the pictures as much as the older children did. Also, younger children might not have been able to recall complicated processes with abstract concepts. They were in a stage of more concrete learning. Children aged 5–6 had more developed motor skills and mental abilities for using the techniques and tools so they concentrated more on the pictures.

Transfer is important in learning models and processes. In Sloyd, transfer can also be seen close to the meta-level. The meta-level includes the understanding and controlling Sloyd processes and goals. In this research, transfer was studied by asking children how they would plan and organize a new Sloyd project. The new project was a wooden Viking sword which was completed in spring 2009. Overall, the preschool aged children had quite good understanding of how they would proceed. All children pointed out that they first had to think about what kind of a sword they would like to make as Elmeri said: "First we have to think... and then we have to draw the sword." Planning was the next thing the children suggested and then making and assessment. Younger children were also able to recall the different phases but they needed the support of the pictures.

Identifying regulation was done by using CBRS. Responding to instructions and initiating appropriate tasks (Item 1.) was studied in four sessions. Concerning goal setting, the topic and the some limitations were given such as material, shape and decorative materials and tools. The personal goals the process can be seen as making the plan of the shield decorations. This can be seen as a close part of the ideating and planning and the phases were arranged together. In ideation and planning, Elmeri

had an idea and started to draw after asking the teacher if the theme was appropriate. After that he concentrated on his sketch. In the first making session, Elmeri raised his hand and answered to what he had done in the first phase (ideation and planning). He also recognized tools and simulated the use of different tools. During demonstration, Elmeri looked very intensively at the teacher to get permission to use the tools and started filing and sanding. In the beginning of the second making session, Elmeri eagerly told what he had done last time and knew what to do next and how to do it (hammering nails according to the plan). He also understood the safety issues and paid close attention to demonstration. Elmeri also changed his way of hammering after the teacher's instructions as one of the nails had twisted. In evaluation, Elmeri compared the plan and the product the way teacher informed and reflected the product and process.

Concerning item 2 (concentration while working, vulnerability to distraction) in ideation and planning, Elmeri concentrated on drawing a Viking soldier and did not look at other children's drawings. During both making sessions, Elmeri concentrated on filing, sanding and hammering. His concentration was not distracted even when the boys next to him started to talk about things unrelated to the project. Furthermore, Elmeri deliberately checked the surface by hand after filing and sanding to control the quality of work. During hammering he stopped for a while to observe others. Overall, Elmeri's work was intense and he didn't start to talk with others until he was finished. Also, during evaluation he concentrated on the evaluation task.

Concerning item 3, Elmeri returned to unfinished tasks after interruption every time something happened. For example, when the teacher made preparations and gave more instructions, Elmeri discussed the task with other children and then returned to his work immediately. During production, he quickly looked at other children's work but immediately returned to his own.

Concerning item 4 (recognition of errors and corrections), Elmeri erased pencil marks during ideation and planning. During the first production session, he tried a new style of using the file before the teacher demonstrated it. In Sloyd, the monitoring and adjusting of actions is crucial. Elmeri inspected the filed edge by hand and continued filing and sanding. During the second production session, Elmeri adjusted his actions after observing his own work and the work of others. In the evaluation phase Elmeri compared his plan and the product and told to the teacher how he succeeded.

Elmeri observed rules and followed instructions (item 5) very carefully the whole time. After task instructions, he concentrated on sketching and drawing. During the first production session, Elmeri followed the teacher's instructions and demonstration on filing and sanding and after finishing his own work, helped others. During the second production session, Elmeri checked the surface and the edges of the wood plate while the teacher gave more instructions. During decorating, Elmeri listened to the teacher's feedback and observed his own decorations. As was discussed concerning Item 2, during evaluation Elmeri followed instructions and concentrated on the evaluation task.

The last item (successful completion) was observed by analyzing the completion the sub-tasks in the project i.e. the phases of ideation and planning and production. In ideation and planning, Elmeri completed the plan and presented it to the teacher. During production sessions, he completed filing, sanding and hammering. At the end of filing and sanding, Elmeri understood the meaning of the present tasks and the next tasks by observing the pictures. He was able to say what he had done and what he should do next and how. After attaching the leather handle to the shield, Elmeri immediately showed his shield to the other children. In the group evaluation Elmeri as well as other children completed the last phase of sloyd by telling about the challenges and successions of the sloyd project.

Craft Sense (meta-level of sloyd)	**CBRS observations of Elmeri**
Goal setting & Planning (of artefact and production process)	1, 2,4, 5,6 (Items)
Implementation	1, 2, 3,4,5,6 (Items)
Evaluation	1,2,4,5,6 (Items)

Figure 3. Elmeri's CBRS observations and the phases of Craft Sense.

As can be seen from figure 3 self-regulation of behaviour can be traced from the sloyd activity. Furthermore, the traces indicate that Craft Sense like (meta-cognitive) regulation of own actions can be recognized by same tools.

Discussion & conclusions

Overall, the results on picture supported learning in Sloyd were positive. By visualization of the learning process, the learning outcome and understanding of the whole learning event is more concrete and thorough. The results also indicate that older children adopted a meta-model of Sloyd. This means that after the learning process, especially the preschool aged children were able to plan a new project and understood the importance of the different phases. The use of the picture supported learning method should be encouraged and it is in use in kindergarten teacher training giving new kindergarten teachers more confidence to teach Sloyd. The method could also be useful in grades 1–3 but this would require supplemental training for kindergarten teachers and preschool and grade teachers.

The results on self-regulation showed that although learning in Sloyd is concrete, the cognitive processes and regulation of actions were visible. Results indicate that CBRS can be used to observe self-regulation in Sloyd and teachers could use it to monitor levels of self-regulation in pupils. The self-regulation of Sloyd itself is good indicator of Craft Sense (compare Peltonen, 2006, p. 57–59). Craft Sense is a meta-level regulation mechanism which can be used to regulate cognitive and production related Sloyd activities. It can be seen analogical to meta-level regulation of cognitive learning. Virta (2006) found in his study that seven adult students adopted a process model that helped them understand Sloyd better. The results concerning self-regulation and Craft Sense can be used to develop children's education so they become more active towards their own learning. The results also indicate that the level of Craft sense was good with Elmeri. In the present study the reason might lie in the sloyd process. Children did not make thorough goal setting and planning. The Planning of the producing process was given. In the next phase the study should concentrate on supporting more demanding sloyd processes of children. In the next study phase after the illustrated sloyd process children could plan and carry out the process by themselves. They could make a sloyd comic (a series of pictures how the process goes) and follow the instructions. This way the process would be more individual. In addition, the more demanding sloyd process would support children's self-knowledge by forcing them to reflect what they know and what they must learn to accomplish the project.

Altogether, sloyd teaching should go deeper in the process already in early education. The new act of division into hours (inception 2016) emphasizes the sloyd teaching and learning in grades 1-6 (Perusopetuksen tuntijako, 2012). This means that younger pupils must have better understanding of sloyd as a process. Also, the renewal of the core curriculum for pre-primary education emphasizes the role of learning abilities i.e. metacognitive knowledge and skills (OPS 2016- Curriculum reform in Finland, 2013). This gives more important role for sloyd in learning. The concrete and in many ways visible producing operation of sloyd can be used as a tool to teach children the abilities to learn. Producing artefacts, knowledge and actions are essential in learning to learn.

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